

REVIEW ARTICLE

HEALTH CARE ENVIRONMENT: A WAR-ZONE!

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ABSTRACT:

Background: Hospital acquired infection remains an important health challenge worldwide not only to health care providers and their patients but also to caring relatives and friends. These group of people are more vulnerable not only because of the exposure to infectious agents but also from total lack or paucity of knowledge on simple, cost-effective and appropriate infection control practices.

Therefore, improving our knowledge on infection control practices will significantly help in combating this problem.

Method: This is review article on various publications and policies especially in developing countries

Conclusion: Adequate knowledge on infection control practices is required by every health care worker for effective health care delivery.

Key words: Health and Environment, War Zone

INTRODUCTION

Since medieval era the transmission of germs is known to occur predominantly among those who care for the sick. The Holy Bible in Leviticus 13-15 provides a guide for the management of infectious diseases; Priests were responsible for the inspection and control of infectious diseases. It highlighted differential diagnosis, isolation, quarantine and disinfection of some infectious diseases.¹

The Miasma theory held sway from middle ages to 1800. It proposed that diseases were caused by bad air.² Health workers wore mask impregnated with sweet smelling flowers in order to prevent themselves from diseases. Consequently, they abandoned hand washing when caring for the sick. Subsequently, germ theory was propounded by Giralamo Fracastoro, validated by Louis Pasteur and proved by Robert Koch.^{3,4} This theory displaced the miasma theory.

Denial of germ theory is still seen today in the form of germ theory escapism/'Ostrichism'. Some health workers are in delusionary state regarding their vulnerability to transmitting and contracting infectious diseases in the work place. It is a common practice where caution is thrown to the winds concerning infection control and prevention. This is compounded by the absence or inadequate infection control facilities particularly

in the developing countries. The philosophy of infection control is the instituting of measures that would isolate the patient who is the major source of infectious diseases along with safe disposal of his secretions, excretions and exhalations in the health care setting.

The challenge of hospital acquired infection

Hospital acquired infection cause significant morbidity and mortality. Outbreak associated attack rate among health care workers ranges between 15 to 30%.⁵

Health-care-associated infections are an important cause of morbidity and mortality among hospitalized patients worldwide.⁶ Such infections affect nearly 2 million individuals annually in the United States and are responsible for approximately 90,000 deaths each year.⁷ The burden of hospital acquired infection in Africa is expectedly high. In developing countries the rates are two to twenty times higher than in the developed countries, prevalence may be as high as 25%.⁸ In a systematic review in 2011 health care associated infections prevalence overall was between 2.5 and 14.8% of health care associated infections in Africa while the cumulative incidence of surgical infection ranged from 5.7% to 45.8%.⁹ In Nigeria prevalence of health care associated infections range between 2.6 and 30.9%.^{10,11}

Ecology of healthcare setting

When a new health facility is constructed not yet occupied by patients, its ecology as far as fauna is concerned is not different from residential building. However, when patients begin to visit the hospital the ecology is changed in to a habitat with high disease causing organisms. Highly virulent organisms are found, microorganisms with various grades of resistance emerge. The door knobs, floors, faucets, hospital walls, chairs, tables, patient folders, patient beds, hospital railings and even the air in some areas may be colonised variously by microorganisms. The patient as it were is the main source of microorganisms. The route of discharge of the microorganisms include: coughing, bleeding, sneezing, body contact with surfaces, sweating and other body excretions and secretions.

The hospital refuse and sewage system into which most of this contaminated fluids and solid materials are discharged are reservoir of possible transmission of germs. Overall, the hospital environment is a habitat where pathogenic microorganisms are transmitted to susceptible host who visit or work in the hospital environment. The persons at risk of contracting hospital acquired infection include Patients, health workers, Visitors and students. To my mind the healthcare setting is a war zone, germs (bugs) are the scud missiles, patient the armoury, health care workers hands are the guns, patients, visitors and health workers are potential casualties.

Infection control and prevention

Infection control and prevention is of primary importance to the healthcare worker, who must remain healthy in order to provide qualitative healthcare to patients.

This is particularly challenging in our current global health manpower crisis. This is even dearer in resource constraint countries. Paradoxically, it is in these settings that policies and facilities for hospital infection control are largely non-existent or rudimentary. Where there are some facilities, attitude of health workers regarding compliance with infection control is poor. Infection control is also of prime importance in reducing the burden of Health care associated infections. The Study of the Efficacy of Nosocomial Infection Control (SENIC) demonstrated that a third of nosocomial infections might be prevented with appropriate infection control measures.¹² The naivety of a medical student concerning protective measures in

healthcare setting in the absence of adequate training and orientation can be likened to a military recruit who impulsively jumps into the battle field without adequate training on personal protection.

Standard precaution must be instituted and compliance monitored. Standard precaution is meant to reduce the risk of transmission of bloodborne and other pathogens from both recognized and unrecognized sources. They are the basic level of infection control precaution, which are to be used as a minimum in the care of all patients. The following are required in preventing and reducing the burden of Health care associated infections.

1. Hospital infection control policy/post recruitment medical screening

It is needful in all healthcare setting to have a clear infection control policy. Such policy should include post recruitment training on infection control, screening of some diseases, protocol on infection control, vaccination against some infectious diseases and a clear protocol for inadvertent exposure to infectious diseases. Additionally, infection control committee/unit is required in all health care settings with a focal person whose main work schedule is infection control.

2. Hand washing:- The importance of hand hygiene in health care setting was pioneered by Semmelweis in 1847 where he observed mortality among women in labour to be 18% in a hospital where hand washing was not practiced compared to 3% in hospital where hands of midwives were washed with chlorine water.¹³ Hand washing is the single most important means of preventing hospital acquired infection.¹⁴ Alcohol-based hand rubs (liquids, gels or foams) are the preferred method for hand hygiene in most situations due to the superior efficacy of these agents in rapidly reducing bacterial counts on hands and their ease of use.¹⁵ Hand hygiene is done in the following situations: before touching patient, before clean/aseptic technique, after exposure to contaminated body fluids, after touching patient, when moving from contaminated body site to clean site of the same patient, after touching inanimate object or medical equipment near patients and after removal of gloves. Nails and jewellery facilitate colonisation and impede proper hand hygiene. Therefore, nail length should be 0.5cm, artificial nails and jewellery should not be worn.¹⁶ Hand washing procedure takes about 40-60 seconds using running tap or bucket water and this involves:

- i. Wet hands with water
- ii. Apply enough of liquid soap that will be enough to cover all the hands
- iii. Rub hands palm to palm
- iv. Place right palm over left dorsum with interlaced fingers and vice versa
- v. Then palm to palm with fingers interlaced
- vi. Backs of fingers to opposing palms with fingers interlocked
- vii. Rotational rubbing of left thumb clasped in the right palm and vice versa
- viii. Rotational rubbing, backwards and forwards with clasped fingers of the right hand in the left palm and vice versa
- ix. Rinse hands under running water; use towel to turn off the faucet
- x. Dry hands thoroughly with a single use towel/hand drier

3. Facial protection: Surgical or procedure mask and eye protection (eye goggles) or face shield should be worn to protect mucous membranes of the eyes, nose, and mouth during activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions. N95 mask are worn to prevent some infectious diseases that are spread by contact, droplet or airborne like viral haemorrhagic fever, tuberculosis, severe acute respiratory distress syndrome and other highly pathogenic influenza like illnesses.

4. Gloves: Indications for wearing gloves include the following: when touching blood, body fluids, secretions, excretions, mucous membranes and non-intact skin; gloves are changed between tasks/procedures on the same patient and after contact with potentially infectious material. Gloves must be removed after use, before touching non-contaminated items and surfaces, and before attending to another patient. Hand hygiene is performed immediately after removal of gloves.¹⁰

6. Gowns: Gowns are worn to protect skin and prevent soiling of clothing during procedures that are likely to generate splashes or sprays of blood, body fluids, secretions, or excretions.

7. Personal protective equipment: This a protective outfit against highly infectious diseases, comprise of a water resistant gown, goggles/face shield, hood, water resistant apron, boots, boots cover, N95 mask and gloves.

8. Respiratory hygiene and cough etiquette: The following measures on respiratory hygiene should be adhered to: When coughing/sneezing, the mouth and nose should be covered with a mask or tissue and hand hygiene performed afterwards. Acute febrile patients with respiratory symptoms should be placed at least one meter away from other patients/people in waiting areas and are educated on respiratory hygiene and finally hand hygiene facilities, mask and tissue should be made available in waiting areas.

9. Needle stick injury prevention: Single use, self-sharpenable needles should be used; needles must not to be bent, recapped or broken. Needles should be discarded into sharp containers/boxes usually placed within arm reach when performing procedures. These boxes should also be discarded when three-quarter filled.

10. Environmental cleaning: Environmental surfaces or objects contaminated with blood or body fluids should be cleaned with detergents and water and then disinfected. Cleaning with moistened cloth/mop should be done from clean to dirty areas and from top to bottom. Dry sweeping with brooms should not be done to prevent aerosolisation of infectious materials.

11. Waste disposal: Hospital wastes are segregated before disposal into waste bins according to International colour codes: Red for Highly infectious waste, yellow for infectious waste, green for non-hazardous medical waste, purple for cytotoxic waste and black for general waste.

Conclusion

Infection control and prevention is of cardinal importance in effective health care delivery service. In the current global health manpower shortage which is more dear in developing countries like Nigeria, adequate knowledge is required by all healthcare workers, to remain healthy and render health services that would not be worse than the treatment thereof.

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